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NEW RACES OF *EMPIDONAX* FROM MIDDLE
AMERICA.

BY ROBERT T. MOORE.¹

The accumulation in the Moore Collection of 576 specimens of the genus *Empidonax*, all fresh individuals recently received and representing every race in Mexico and Central America, has thrown new light on this difficult group. The implications will be discussed in detail in my report on the birds of Sinaloa and surrounding states. I need say here only that in the species *E. difficilis* the development of characters from one race to an adjoining one follow north-south axes, somewhat recalling a similar process, which was described in my "Review of the Subgenus *Burrica*," Condor, Vol. XLI, September-October, 1939, p. 178. In the arid areas of both the desert and plateau groups the yellow becomes brighter as we proceed south and the greens on the breast become more brownish, contrasting strongly with the yellows of the belly and throats. On the other hand, there is a group between them in the heavier rainfall mountain areas, following the Rocky Mountains south along the Sierra Madres of Sonora to Nayarit, in which the yellows of the belly and greens of the breast become *duller*, as we proceed south, so that the entire under parts are much more uniform. Two races, hitherto undescribed, appear in this continuous mountain chain, both of them far more distinct from true *difficilis* to the west and *hellmayri* to the east than they are from each other. They are described herein, as well as another unexpected race from Honduras.

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¹ Contribution from the California Institute of Technology.

Griscom, who graciously re-examined with me the *difciliſ-flavescens* group of *Empidonax* from Chiapas and Honduras, and who concurs with my determination of the new form from Honduras; to Dr. Wetmore for his unusual generosity in granting the right to inspect specimens recently taken in Guatemala, and to him, Dr. Friedmann, Dr. Oberholser for permission to compare the material in the United States National Museum and the Biological Survey; to Mrs. Donald Dickey and Adrian van Rossem for similar courtesies covering the Dickey Collection.

Empidonax difciliſ immodulatus,² subsp. nov.

MT. MOHINORA FLYCATCHER.

Type.—Adult breeding female; number 18472; collection of Robert T. Moore; east side of Mt. Mohinora peak, S. W. Chihuahua, Mexico; Upper Transition Zone, altitude 10,500 feet; May 12, 1937; collected by Robert T. Moore.

Subspecific characters.—Nearest to *Empidonax difciliſ difciliſ*, but differs in having breast-band wider, duller, darker green, and throat duller green; upper parts somewhat darker, and size somewhat larger. Differs from *Empidonax d. hellmayri* of Texas in duller breast and upper parts; belly paler yellow. Differs from *E. d. occidentalis* Nelson of southern Mexico, formerly known as *E. d. bairdi*, in having upper parts and breast less brownish; wing bands paler; bend of wing less cinnamon.

Range.—From Transition Zone of extreme S. W. Chihuahua (11,000 feet), north through higher parts of Sierra Madres at least to Upper Sonoran Zone (6,000–7,000 feet) of Santa Rita Mountains, Arizona.

AVERAGE MEASUREMENTS OF *E. d. immodulatus*.

| | Wing | Tail | Ex. Cul. | Wid. Cul. | Tar. |
|-----------------------|------|------|-------------|--------------|------|
| Average—19 ad. ♂..... | 69.5 | 58.8 | 11.1 | 5.4 | 16.5 |
| Average—7 ad. ♀..... | 65.1 | 56.5 | 10.9 | 5.7 | — |

Specimens examined.—Moore Collection—*E. d. immodulatus*: Mexico: Chihuahua: Mt. Mohinora 1 ♀ (Type May 12 breeding), San Feliz 1 Im. ♂ (Aug. 19); Durango: Muertocito 1 ♂ (June 11 breeding). Migrants: Sinaloa: Palos Verdes Mine 1 ♂ (Oct. 29), Rancho Batel 1 ♂ (Apr. 15); Nayarit: Tepic 1 ♂ (Aug. 22). M. C. Z. Collection—Chihuahua: Pinos Altos 5 ♂ 1 ♀ (June 4–July 14), Bravo 6 ♂ 2 ♀ (July 24–Aug. 8), Jesus Maria 1 ♀ (Apr. 24). Slightly intermediate between *immodulatus* and true *difciliſ*, but nearer the former: Dickey Collection—United States: Arizona: Santa Rita Mts. 3 ♂ 2 ♀ (May 7–June 8 breeding). *E. d. hellmayri*, *E. d. difciliſ* and *E. d. occidentalis*: large series of the second and third in the Moore, U. S. N. M., Bio. Sur., Amer. Mus. Nat. Hist. collections and adequate series of the first in the U. S. N. M. and Bio. Sur. collections.

² *Immodulatus*, unrhythymical, because this form breaks up the rhythm of the yellow-bellied races of *difciliſ* as we proceed from the coastal desert of Sinaloa east to Chihuahua and Durango.

Remarks.—The southern end of the Rocky Mountains and their continuation, the Sierra Madres of Mexico, with their heavier rainfall areas at high altitude, break up the east-west continuity of the brighter yellow-bellied races of *difficilis*. In these areas along the tops of the mountains from elevations of 6,000 feet to 11,000 feet, we have two races, both of them with darker greens and paler yellows than the races of the more arid desert areas, to the east and west. *Immodulatus* extends from some unknown point in the southern Rocky Mountains, at least from the Santa Ritas in Arizona, south to about Muertocito and San Feliz near the junction of the three states of Chihuahua, Durango and Sinaloa. At about this place a new mountain race begins, which has a still paler yellow belly and smaller size, to be described later. Intergrades between the two appear at Muertocito near the Durango-Sinaloa line. The male from this locality in its large size and coloration is almost pure *immodulatus*, whereas the female has the coloration of the more southern race, but the large size of the northern race, being almost an exact intergrade.

The specimens from the Santa Rita Mountains, which I have classed as slightly intermediate between true *difficilis* of California and *immodulatus*, are definitely breeding birds of that area, the May 30th female having had a nest with four eggs. These birds are perceptibly darker on the throat and upper part of the breast than true *difficilis*, average larger in size and differ very little, if at all, from *immodulatus*. Although I have inspected a fine series of *hellmayri* at the U. S. National Museum, I have not been able to directly compare these Arizona birds with them, but I have compared the series of true *immodulatus* with both at different times. Coming from the 6,000–7,000 feet elevation, they certainly represent the tendency of all the birds of the great mountain chain, dividing the western desert from the eastern high plateau areas, to show darker coloration above and on anterior under parts.

The altitude of the Type locality on Mount Mohinora, 10,500 feet, is the highest point at which we have taken any *difficilis* in Mexico. *Immodulatus* migrates due south along the tops of the mountain range, following them to as low an altitude as 3,000 feet at Tepic in Nayarit, but it does not seem to descend to the more arid coastal plains of Sinaloa to the west, nor even to the higher plateau to the east in Durango.

***Empidonax difficilis bateli*, subsp. nov.**

RANCHO BATEL FLYCATCHER.

Type.—Female adult nesting; number 20639, collection of Robert T. Moore; Rancho Batel, six miles north of Santa Lucia in mountains of southeastern Sinaloa, Mexico; June 4, 1938; altitude 6,200 feet; collected while sitting on nest by Robert T. Moore.

Subspecific characters.—In breeding plumage nearest to *E. d. immodulatus* of Chihuahua, but belly paler yellow; greens above and below darker and duller; bend of wing more buffy; and size much smaller. Differs from *Empidonax difficilis difficilis* in being much darker and greener (less yellowish) olive above; much more brownish olive (less yellowish) on upper breast; inner margins of secondaries in adults more buffy; throat and belly much

duller; and under parts much more uniform below. Differs from *E. d. hellmayri* of Texas, as well as from the birds of the plateau region of Chihuahua and Durango, in having the upper parts darker and browner; breast browner; abdomen paler yellow; and size smaller. Differs from *E. d. occidentalis* of the southern part of the Mexican Plateau in being darker throughout, much purer green (less yellowish); and duller both in the greens, as well as yellow of abdomen.

Range.—In the Transition Zone of the high mountains of western Durango, southeastern Sinaloa and Nayarit, chiefly on the western side of the Sierra Madres.

AVERAGE MEASUREMENTS OF *E. d. bateli*.

| | | Ex. | Wid. | | |
|-----------------------------|------|------|------|------|------|
| | Wing | Tail | Cul. | Cul. | Tar. |
| Average—4 ad. ♂ | 63.6 | 53.8 | 10.7 | 5.3 | 16.2 |
| Average—1 ad. ♀ (Type)..... | 62.5 | 56.3 | 10.4 | 5.3 | 16.0 |

Specimens examined.—Moore Collection—*Bateli*: Sinaloa: Rancho Batel 1 ♀ (Type, June 4), 1 ♂ (May 22); Nayarit: near Tepic 3 ♂ (Aug. 20–23). Intergrade, *bateli* x *immodulatus*: Durango: Muertocito 1 ♀ (June 16).

Remarks.—*Bateli* is not an intergrade, nor an intermediate. It is darker and duller both in the greens and yellows than any of the races geographically surrounding it, and it is smaller than any of them.

Empidonax difficilis seclusus, subsp. nov.

OCOTOPEQUE FLYCATCHER.

Type.—Male adult in freshly molted breeding plumage; number 16907, collection of Robert T. Moore; Montaña El Chorro, Ocotopeque, northwestern Honduras; June 30, 1936; collected by C. F. Underwood.

Subspecific characters.—Nearest to the birds of Guatemala, currently believed to be the same as *Empidonax salvini* Ridgway, but differs from the type in being browner, duller (less glossy green) above; darker buff (more cinnamon) on bend of wing and wing-bars; throat and belly much brighter yellow. Differs far more from the specimen recently taken by Griscom (Bird-life in Guatemala, Bull. Am. Mus. Nat. Hist., Vol. LXIV, 1932, p. 264) and the old Dueñas individual in the Museum of Comparative Zoology in the above-mentioned characters, but especially in being much browner above. Differs markedly from members of the species, *Empidonax flavescens*, in being very much duller (more brownish) green above; paler yellow on throat and belly; duller brown (less yellowish-green) on breast; wing-bars more cinnamon (much less green). Differs from *E. difficilis occidentalis*, hitherto known as *E. difficilis bairdi*, in much darker breast (green instead of brown), more contrasted with the throat; greener back; and smaller size.

Range.—High mountains of northwestern Honduras (Province of Ocotopeque).

AVERAGE MEASUREMENTS OF *E. d. seclusus*.

| | Wing | Tail | Ex. Cul. | Width Cul at Nostril | Tar. |
|------------------------|------|------|-------------|----------------------------|------|
| Average—4 adult ♂..... | 65.7 | 54.4 | 10.5 | 5.3 | 15.9 |
| Average—7 adult ♀..... | 62.2 | 51.6 | 10.9 | 5.5 | 15.8 |

Remarks.—The finding in the Moore Collection of a series of nine breeding adults (June 24 to July 27, 1936) and two juveniles, just out of the nest, extends the range of the *difficilis* group several hundred miles farther south and constitutes the first recorded specimens for Honduras. However, two specimens in the Museum of Comparative Zoology, obtained at El Derrumbo, Honduras, by Mr. Underwood, were taken earlier, July 16 and July 22, 1933, but were classified at the time as *E. flavescens dwighti*. They may indicate that *seclusus* breeds farther south in Honduras.

The type of *Empidonax salvini* Ridgway is a puzzling bird. Dr. Dwight pointed out to Dickey and van Rossem (Auk, 1928, Vol. XLV, p. 359) that "the bright green *Empidonax* which has currently passed as *salvini* did not agree with the original description (Ridgway's) of that form," and expressed the belief the type "remains unique." Griscom (Opus cit. p. 264) called attention to an old specimen in the Museum of Comparative Zoology from near the type locality, Dueñas, which in his judgment is a topotype and recorded the "rediscovery" of the species as represented by an immature male, taken by himself at Panajachel on August 15, 1930. There is a strong possibility that these two latter are the same as *salvini*, but certain discrepancies should be pointed out.

The Moore Collection contains a large series of recently-taken breeding birds, both of *E. flavescens dwighti* and two races of *E. difficilis*, a total of about forty individuals coming from two widely separated general areas, near Comitan in southeastern Chiapas and various localities in the Province of Ocotepeque in northwestern Honduras. Specimens of *flavescens* and of *difficilis* occur in both groups from exactly the same places, so it is obvious that they are specifically distinct. The chief specific characters distinguishing them are that the *flavescens* group shows glossy brighter green above and below, whereas the *difficilis* group has a much duller back, while the throat and belly are paler yellow and the breast browner. In addition, the *flavescens* group has the wing-bars distinctly greenish, whereas the *difficilis* group shows these areas more brownish-cinnamon. Comparing the Dueñas and Panajachel individuals, mentioned above, with these two series it becomes clear that they belong definitely to the *difficilis* group, although the former is somewhat soiled on the breast.

Unfortunately, we can not be so certain about the type of *salvini*. In some characters it resembles *difficilis* and in some *flavescens*, leaning a little closer to the former. For example, the upper parts are glossy-green and in this character precisely match my two male specimens of *E. flavescens dwighti* from Santa Rosa, Chiapas, but on the under parts it is closer to *difficilis*, showing a distinct contrast between the breast, which is brownish-olive, and the dirty yellow belly. It lacks the general greenish coloration

of the *under* parts so characteristic of *flavescens*. On the whole, it is closest to a June 9th female of *difcicilis* in the Moore Collection from Santa Rosa, Chiapas. Unquestionably this type is badly "foxed" below and it may never be possible to determine if it is a hybrid between the *difcicilis* and *flavescens* group, or truly represents a race of *difcicilis*, existent in Guatemala. Griscom was inclined to believe that the type of *salvini* and the Dueñas specimen belong to the *difcicilis* group and were migrants from farther north, probably under the impression that no member of the *difcicilis* group bred that far south. The discovery of my new series of unquestionably breeding adults of *seclusus* (June 4-July 27), from Honduras, and, furthermore, the taking of two birds with very short tails just out of the nest at Monte Verde in the Province of Ocotopeque, prove that *difcicilis* does breed much farther south, and leads to the inference that some form of *difcicilis* should breed in Guatemala. Therefore, it seems to me unwise to disturb the current name for the bird of Guatemala, *E. d. salvini*, which should include apparently those of Chiapas, for my female from Santa Rosa resembles the type, except for the glossy backs, rather closely.

All of the females of *seclusus* have the outer (tenth) primary shorter than the fourth, while in the males it is a little longer, but still shorter than the fifth primary.

The reduction of *Empidonax bairdi* Sclater to the synonymy of *Tyrannula affinis* Swainson (van Rossem, Bull. Mus. Comp. Zool. Vol. LXXVII, No. 7, p. 393) leaves the bird of southern Mexico from Guerrero through Oaxaca to Morelos, including Michoacan and the State of Mexico, without a name, unless breeding specimens of *E. d. salvini* be found in Guatemala and prove to be identical with the breeding birds of southern Mexico. Van Rossem (*loc. cit.*) indicated finding only winter specimens in the British Museum. Fortunately there is another name available. The type of *Empidonax bairdi occidentalis* Nelson from Pluma, Oaxaca, although taken in March, can be matched precisely by some at least of my new series of freshly-taken individuals from south central Mexico, particularly by a Temascaltepec male with sex organs fully developed (June 23, 1934), by a female from Chapultepec, Morelos, marked on the tag "ovaries in breeding condition" (May 23, 1935), while it differs from a June 11th female from Huitzilac, Morelos, and from a May 24th male from Omilteme, Guerrero, in being only very slightly paler above. Therefore, I suggest that tentatively the breeding birds of southern Mexico be known as *Empidonax difficilis occidentalis* Nelson. On the other hand, I believe that Ridgway was correct in reducing *Empidonax bairdi perplexus* Nelson to the synonymy of *difficilis difficilis*. It is a female with a wing measurement of only 61.8 mm., far too small to represent a migrant of *Empidonax difficilis hellmayri* Brodkorp, which I deem a perfectly valid race.

Van Rossem in the Auk (1928, Vol. XLV, p. 359) and again in his Birds of El Salvador (Field Mus. Nat. Hist. Zool. Ser. Vol. XXIII, p. 380) lays great stress on the orbital ring in *Empidonax salvini* not being interrupted by a "wedge of green" as it is in *Empidonax flavescens dwighti*. In my long series of the two species I find this character variable and believe we have too few authentic specimens of *salvini* to rely upon it. The type may be

abnormal. For example, of my three specimens of *Empidonax flavescens* from Costa Rica, two have the eye-ring complete and in several specimens of the *E. difficilis* group some both complete and incomplete eye-rings are found.

Specimens examined.—*Seclusus*—Moore Coll.—Honduras: Province Ocotopeque, Montaña El Chorro 1 ♂ (Type June 30), El Chorro 1 ♂ 1 ♀ (June 24–July 9), Montaña El Sillon (? = ♂ July 2), Montaña La Cruz 4 ♀ (June 25–July 7), Las Ventanas (? = ♀ July 27), Monte Verde 2 juv. ♂ (just out of nest July 22–24); M.C.Z. Coll.—Honduras: El Derrumbo 1 ♂ 1 ♀ (July 16–22). *Salvini*—U. S. N. M. Coll.—Guatemala: Calderas 1 ♂ (Type Oct. 10); M.C.Z. Coll.—Guatemala: Panajachel 1 Im. ♂ (Aug. 15), Dueñas 1 (? = ♀); Moore Coll.—Mexico: Chiapas: Santa Rosa 1 ♀ (June 9). *Occidentalis*—Biol. Sur. Coll.—Mexico: Oaxaca: Pluma 1 ♂ (Type March 18), Guerrero: Omilteme 1 ♂ 2 ♀ (May 22–24); Michoacan: Mt. Tancitaro 1 ♂ 1 ♀ (March 1–3); Morelos: Cuernavaca 1 ♂ (Jan. 3), Huitzilac 1 ♀ (June 11); Moore Coll.—Chapultepec 1 ♂ 2 ♀ (Feb. 28–May 23), Atlacomulco 1 ♂ (Aug. 30); Mexico: Desierto de Leones 1 ♂ 1 ♀ (Apr. 11), Temascaltepec 1 ♂ (June 23); Guerrero: Cuapongo 1 ♂ (May 30); M.C.Z. Coll.—Tamaulipas: Galindo 4 ♂ 3 ♀ (Mch. 16–22); Vera Cruz: Orizaba 2 ♂; Moore Coll.—N. W. Guanajuato: Xichu 1 ♂ 1 ♀ (Apr. 20–24 breeding). Intermediates—*Occidentalis* x *bateli*—Michoacan: Rancho La Cofradia near Uruapan 8 ♂ 3 ♀ (June 7–July 5 all breeding). *E. flavescens dwighti*—Moore Coll.—Mexico: Chiapas: Santa Rosa 2 ♂ 2 ♀ (June 1–16); Honduras: Ocotopeque: Montaña El Chorro 1 ♂ 2 ♀ (June 30–July 3), El Chorro 1 ♂ 1 ♀ (June 22–23), Las Ventanas 1 ♂ 1 (?) (July 27), Monte Verde 1 ♂ 1 ? (July 21–24), Montaña La Cruz 1 ♂ 1 ♀ (June 25–July 7), Monte El Portillo 1 ♀ (May 30); Province Tegucigalpa: Alto Cantoral 2 ♂ (Jan. 16–24), Cantoral 1 ♂ 3 ♀ (Feb. 5–Apr. 18); Underwood Coll.—Honduras: Tegucigalpa: Alto Cantoral 4 ♂ 2 ♀ 2 ? (Jan. 17–Feb. 10), Cantoral 5 ♂ 3 ♀ (Jan. 25–Apr. 16), El Derrumbo 1 ♂ (Aug. 3). M.C.Z. Coll.—Guatemala: San Lucas 1 ♂ 1 ♀ (Jan. 14–June 5); A. M. N. H. Coll.—Guatemala: Finca Sepur 1 ♂ (Dec. 29), Vol. San Lucas 2 ♀ (June 1–4), Vol. de Agua 1 ♀ (May 15), Teepam 1 ♀ (July 21). Also I have inspected the female from Tumbala, Chiapas (Nov. 17).